

Interactive comment on “Changes in C₃/C₄ vegetation in the continental interior of the Central Himalayas associated with monsoonal paleoclimatic changes during the last 600 kyr” by M. Mampuku et al.

Anonymous Referee #1

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On the whole, I find the manuscript very interesting because there is data of carbon isotopic data from the region. The authors indicated significant expansion of C₄ plants in glacial stages is due to strength aridity for the region. The observed change of C₄/C₃ vegetation in glacial and interglacial scale are similar to that which has been found in Lake Quexil, Mesoamerican (Huang et al., 2001) and Sacred Lake, Mount Kenya (Street-Perrott et al., 1997), where mean annual precipitation are over 1000 mm.

Discussion

1, p875, line 2, the description on C4 and C3 plants isn't exact. To present, we know that tree is owing to C3 plants, but C3 also include wider plants species (shrubs and grasses). Further, the change of non-arboreal pollen (NAP) content is only a reference for relative tree and grass/shrub.

2, To interpret the carbon isotope of bulk material in the lake, detail information is need. Isotopic signature of bulk sedimentary organic matter in lake includes complex information from different isotopic sources, as land plants, water plant, algae and others. It is very necessary to distinguish TOC source for interpret carbon isotopic variations in lake sediment. Author utilize the n-alkane L/H ratio and C/N as reference, however, the data in table 2 tell us there is a relationship between d13C values and the C/N, higher d13C are relative to lower C/N. This may imply that high d13C value may involve contribution of water organism. Other, carbon preference index (CPI) of n-alkane may be better indicator than L/H for distinguish TOC source. If the extracted n-alkane listed in table 2 were determined for specific compounds (C29 and C31) d13C, it is help to confirm C4/C3 change.

3, p877, line 7 to 9, author thought the much sand input result in TOC decreasing in sediment sequence (11m and 90m). If so, detail discussion is need to do for the cause of fluxing sand dynamics. If water dynamic effect on sand content in sediment, more sand content may mean wetter condition other than dry. In other words, high TOC concentration in sediments can't be explained as increasing river flow or wetter periods.

4, TOC, C/N and carbon isotope of modern process such as surface sediments can help to understand paleo-signal in sediments. If it is possible, adding the information from modern in discussion.

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